PARTNERS FOR FISH AND WILDLIFE PROGRAM
CANDIDATE SPECIES CONSERVATION PILOT INITIATIVE
FINAL REPORT (FY 2007-FY2011)
SOUTHEAST REGION

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FINAL REPORT

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INTRODUCTION:

Beginning in fiscal year (FY) 2007, the U. S. Fish and Wildlife Service (Service) initiated a National Candidate Conservation Pilot Initiative to identify and implement processes and conservation practices that will over the short term remove or reduce habitat related threats to Candidate and at-risk species on private lands, and over a longer term sustain or increase the populations of these species such that their listing as threatened or endangered under the Endangered Species Act may not be necessary.

To help achieve the purpose of this initiative, each Service Region, beginning in FY 2007, was directed to carry out several strategic actions:

- Collaborate with Service biologists in other program areas to identify specific candidate or at-risk species for which threats could be reduced or removed through additional or improved voluntary habitat improvement actions on private lands.

- Identify and implement efficient and effective cross-program collaboration efforts that will share technical expertise and available project funds.

- Identify and implement specific technical assistance and conservation practices to help private landowners conserve Candidate or targeted at-risk species.

- Develop and implement voluntary partnerships with private landowners and other partners with a mutual goal to improve the habitat and population status of Candidate or targeted at-risk species.

The Partners for Fish and Wildlife (PFW) Program in the Southeast Region works with private landowners and other partners on a voluntary basis in developing and delivering specific conservation practices that benefit Federal trust resources (e.g., wetlands, federally protected species, Candidate species, jurisdictional fish, migratory birds, and other species of concern). In general, the majority of land within the Southeast Region is privately owned, and many federally or State protected or at-risk species reside in or use private lands. Habitat improvement projects carried out through the PFW Program are developed at the field level in collaboration with our partners. The PFW Program is a direct federal assistance program, and does not solicit proposals through a "request for proposals" process. PFW biologists are typically substantially involved in the development and implementation of projects at the local level with our partners through a cooperative agreement process. Proposed projects are reviewed at the State level and

ranked by a cross-program Service team, based on Service priorities. Habitat improvement projects on private lands that would benefit Threatened, Endangered, or Candidate species receive the highest priority for funding (U. S. Fish and Wildlife Service, 2007).

In developing this five-year pilot initiative (FY 2007-FY 2011) and selecting the species to consider in this report, PFW staff, in collaboration with Endangered Species Program staff, reviewed past and expected private lands habitat improvement opportunities relative to the removal of specific threats, and the expected benefits of specific conservation practices to the target species (e.g., known occurrence and use of private lands by the selected species, minimizing or eliminating significant threats, and providing important life needs).

Due to factors beyond our control, we assumed that it would be unlikely that the Service could recommend a status change (i.e., removal from the Candidate list, or preventing the listing of a species) over the five-year time frame for this pilot for any of the species that are targeted for habitat improvement practices through the PFW Program. The delivery of specific conservation practices on private lands should not be viewed as a "quick fix" for the species targeted in this initiative or for any other species, but should be viewed within the context of a longer-term, landscape-level strategic conservation approach. Following the implementation of conservation practices, it may take many years for the habitat to move through various stages of habitat succession and recovery toward achieving the desired habitat functions needed to sustain or increase the population status of the target species. On the other hand, specific habitat management practices within existing habitat to restore or enhance specific life needs of a target species, or efforts to remove specific threats, may achieve the desired results in a shorter period of time. Also, it may not always be possible to minimize or remove the most significant threats or limiting factors to the species through our habitat improvement actions (e.g., where the construction of large dams has significantly impacted the survival of the species).

Objective, scientific evaluations of population response to the implementation of specific conservation practices also demands the establishment of baseline criteria and long-term collection and evaluation of habitat and population data. Also, related independent environmental factors such as climate, significant weather and storm events, disease, external contaminant issues, migration, documented population cycles, etc. must be factored into evaluations in order to detect real changes in population trends.

Table 1 provides a listing of the species that were selected for specific conservation focus through the PFW Program during this five-year pilot initiative. These species are known to have important remaining populations on private lands. Also, the known threats to their life needs and the conservation practices needed to remove or reduce some of the these threats are doable, private landowners and other partners are willing to work with us, and we have estimated that the conservation practices to be implemented will result in tangible benefits to the target species.

Table 1. Selected focal species to be actively addressed through the PFW Program on private lands over the next five years (FY 2007-2011).

Common Name	Primary Habitat Target	Geographic Focus	Status*
Black pine snake	Longleaf pine	Southeastern MS; Southwestern AL**	C
Elfin-Woods Warbler	Coffee Plantations	Puerto Rico	C
Gopher tortoise	Longleaf pine	AL (east of the *** Tombigbee and Mobile Rivers), Southeastern SC, GA, FL; Sandy Coastal plains	C+
Slabside pearlymussel	Aquatic; Riverine	AL, KY, TN; Cumberland and Tennessee River Systems	C
Yellowcheek darter	Aquatic; Riverine	AR; headwater streams of Little Red River	E++
Everglades bully (Plant; upright shrub)	Tropical pinelands;	South Florida; Miami-Dade County	C

*C=candidate species; E=endangered species
**The species is likely extirpated in Louisiana, although its historic range included extreme eastern Louisiana.
*** The gopher tortoise is listed under the Endangered Species Act as threatened in Louisiana, Mississippi, and west of the Tombigbee and Mobile Rivers in Alabama, and is a Federal candidate for listing throughout the remainder of its range.
+The gopher tortoise in the eastern part of its range was officially listed by the Service as a candidate species on July 27, 2011. It was previously a species of concern.
++At the time we began this pilot initiative, the yellowcheek darter was a candidate species. The species was subsequently listed under the Endangered Species Act as Endangered (E) on September 8, 2011.

STRATEGIC APPROACH:

Our basic strategic approach for conservation delivery through the PFW Program includes:

- *expanding existing core habitat areas near refuges and other protected areas,*
- *reducing habitat fragmentation and establishing movement corridors as needed,*
- *controlling or eliminating invasive species,*
- *promoting biological diversity within focus areas,*
- *identifying specific threats to priority species and implementing conservation practices that reduce or eliminate such threats, and*
- *working closely with all of our conservation partners to develop and carry out meaningful biological response monitoring efforts for target species to help us document success and promote adaptive management.*

Since Candidate species and species of concern such as those identified in State Wildlife Action Plans are not listed as Threatened or Endangered under the Endangered Species Act, there is no Service recovery plan that addresses what is necessary for removing a species from the Service candidate list or to prevent the future listing for these species. PFW Program staff has collaborated with Service Recovery Program staff in developing our conservation delivery approach, and we have reviewed the scientific literature (e.g., Service Species Profiles and reviews) for specific information about the species addressed in this initiative. One of the key challenges for evaluating any Candidate species or species of concern is to determine, based on the best scientific information available, how much suitable habitat is available. This should include an evaluation of the quality of the habitat with regard to the needs of the species, and the best strategic

locations for implementing those specific conservation practices that will reduce or eliminate threats with a goal of sustaining or expanding existing populations.

Service staff is following the Director's guidance and the strategic conservation approach provided in the Service's Strategic Habitat Conservation Report (2006).

In summary, in carrying out this initiative PFW Program staff has strived to address the following overarching information needs and strategies within our program capacity:

1) Search out, obtain if available, and use the most up to date population status and distribution information relative to priority focus areas or areas where most of our work on private lands is expected to occur; establish baseline criteria that can be used after the project is implemented to evaluate success;

2) Identify, evaluate, and prioritize threats within selected geographic focus areas relative to the life needs of the target species, and define specific conservation practices and activities that will remove or reduce those threats;

3) Identify private landowners and other partners within targeted focus areas that may be willing to work with us; contact these entities and develop voluntary conservation action plans and specific projects designed to implement items 1-2 above. Seek out and utilize all available sources of technical assistance and funding;

4) Use existing Service incentive tools (e.g., Candidate Conservation Agreements and Candidate Conservation Agreements with Assurances) as appropriate. A candidate conservation agreement with assurances provides non-Federal landowners with an incentive established through a voluntary conservation plan and agreement that limits additional regulatory restrictions should the candidate species be listed under the Endangered Species Act.

5) Actively engage with the Natural Resources Conservation Service (NRCS) and the Farm Service Agency (FSA) through participation in State Technical Committees in each State to help ensure that additional ranking points are received for all Farm Bill conservation program projects on private lands that would benefit Candidate species or species of concern.

6) Develop and implement a conservation and monitoring strategy with measurable criteria that will help to illustrate success;

7) Evaluate the need and scientific merit to establish a re-stocking effort to re-introduce the target species into suitable habitat that is protected, restored or enhanced on private lands.

The Partners for Fish and Wildlife Act of 2006 mandates that the PFW Program direct its activities to "providing technical and financial assistance to private landowners to restore,

enhance, and manage private land to improve fish and wildlife habitats." The magnitude of private landowner conservation opportunities and needs greatly exceeds the assistance capacity of the PFW Program. As such, PFW staff must collaborate and work closely with other Service conservation delivery programs (e.g., Fisheries, Migratory Birds, Refuges and Wildlife, Federal Assistance, Endangered and Threatened Species, Science Applications), and a variety of other partners in developing and implementing conservation actions on private lands.

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U. S. Fish and Wildlife Service. 2006. Expanding our cooperative conservation partnerships with private landowners to increase recovery and candidate conservation efforts. January 23, 2006 Memorandum from Director to Service Directorate.

U. S. Fish and Wildlife Service. and U. S. Geological Survey. 2006. Strategic habitat conservation: final report of the National Ecological Assessment Team. U. S. Dept. of the Interior, Washington, D. C. 45 pp.

U. S. Fish and Wildlife Service. 2006. Candidate species by state. Internet at: **http://www.fws.gov/southeast/es/state%20candidate.htm** Accessed 11/30/2011.

INFORMATION SUMMARY FOR SELECTED SPECIES:

BLACK PINE SNAKE *(Pituophis melanoleucus lodingi)*: Historically, the black pine snake occurred in one parish in Louisiana, 14 counties in Mississippi, and three counties in Alabama. Survey information has indicated that this species has likely been extirpated in Louisiana, as well as from two counties in Mississippi. Surveys have also indicated that the black pine snake likely still occurs in Clarke, Mobile, and Washington counties in Alabama; and, Forrest, George, Harrison, Jones, Marion, Pearl River, Perry, Stone, and Wayne counties in Mississippi. The black pine snake may intergrade with the Florida pine snake in Baldwin and Escambia counties in Alabama, but this intergrade occurs within the historic range of the black pine snake. Of the total habitat known to be occupied about 60 percent is on Federal land, 5 percent on other publicly-owned or managed lands, and 35 percent on private lands. In Alabama, most of the remaining populations are believed to occur on private lands. In Mississippi, populations are concentrated on the DeSoto National Forest, and the Marion County Wildlife Management Area, although some populations still occur on private lands.

Black pine snake: ***Photo Credit: Roger Clay***

THREATS: The primary threats to this species are the destruction and loss of habitat and killing by humans. Habitat fragmentation and fire suppression within the longleaf pine ecosystem threatens the continued existence of all black pine snake populations. The current listing priority for this subspecies is high, since the magnitude and immediacy of threats is high. The occurrence and distribution of the black pine snake is highly correlated with the historic range of the longleaf pine ecosystem. Today, the remaining longleaf pine forests in the southeast have been reduced to less than five percent of historical extent. Black pine snake habitat has been eliminated through land use conversions, primarily urban development and conversion to agriculture and other pine ecotypes.

HABITAT PREFERENCE: Black pine snakes prefer sandy, well-drained soils with an overstory of longleaf pine. Also, they seem to prefer open canopies, reduced mid-stories, and dense herbaceous understories. They spend as much as 60 percent of their time underground, and are frequently found underground in rotting pine stumps. They have not been shown to us gopher tortoise burrows. Forest management strategies such as fire suppression, increased tree-stocking densities, and removal of downed trees and stumps all contribute to the degradation of habitat. Most of the remaining patches of longleaf pine on private land are fragmented and degraded.

RECOMMENDED HABITAT IMPROVEMENT ACTIONS:

- Reestablishment of longleaf pine and associated native ground cover within the historic range of the black pine snake,
- implementation of forest management practices, including the use of prescribed fire, and
- control or elimination of invasive species.

ESTIMATE OF SURVEY AND MONITORING NEEDS:*

The removal of the black pine snake from the Candidate list will be dependent upon the removal of known threats and the positive effects of specific conservation actions on the population status of the black pine snake. The collection and evaluation of information involving several current information gaps over an extended period of time is needed to objectively evaluate these options. Initial data information needs include:

1) Baseline and post habitat improvement surveys for the black pine snake within designated focus areas on private and/or public lands to determine existing population levels, reference conditions, and biological responses to specific habitat improvement and re-stocking actions;

2) DNA analysis of the black pine snake intergrade as determined to be appropriate;

3) An evaluation of the need and feasibility of captive breeding and reintroduction of the species into suitable restored habitat. The species is known to do well in captivity. The purpose of any propagation effort would be to reintroduce self-sustaining populations of black pine snakes within its

native or historic range in Alabama, Mississippi, and perhaps a few parishes in Louisiana. Captive reared snakes could be reintroduced to private lands tracts without a Candidate Conservation Agreement with Assurances (CCAA) document, although a CCAA would be available to those landowners that wanted such an agreement if all of the regulatory and compliance documents were in place. We believe that most landowners would allow the Service to re-introduce black pine snakes on their land without a CCAA.

We estimate that a reasonable level of support for carrying out the survey and monitoring needs on an annual basis is $50,000. Further, additional support of approximately $100,000 would be needed annually for any captive propagation and re-stocking efforts.

* A designated funding source for these estimated needs has not been determined.

FIVE-YEAR HABITAT ACCOMPLISHMENTS THROUGH THE PFW PROGRAM:

All PFW biologists, as part of their job responsibilities, are directed to assist the USDA (e.g., NRCS and FSA) in the delivery of their Farm Bill conservation programs. As such, PFW biologists attend State Technical Committee meetings and appropriate sub-committee meetings and provide information in support of our recommendations for project ranking criteria, conservation practices, and threatened, endangered, and candidate species and other Federal trust resources. Also, PFW staff assists with the identification of private landowners interested in USDA conservation programs, and with environmental reviews and habitat improvement planning in the field as requested. The USDA Farm Bill conservation programs have traditionally been well funded, and have assisted many landowners with the implementation of conservation practices that would be beneficial to the black pine snake in Alabama and Mississippi.

The Service has prepared a draft Candidate Conservation Agreement (CCA) for the Black pine snake in Mississippi (U. S. Fish and Wildlife Service, 2012). Key partners in this CCA include the U. S. Department of Agriculture, Forest Service; the U. S. Department of Defense, Army, Mississippi Army National Guard; and the Mississippi Department of Wildlife, Fisheries and Parks. Other important partners include the Longleaf Alliance, The Nature Conservancy, the Mississippi Chapter of the Wildlife Society, and the Partnership for Amphibian and Reptile Conservation, all making important contributions toward the recovery of this and other at-risk species.

The Service, in partnership with the NRCS, has funded a habitat evaluation study through Mississippi State University, involving both public and private lands in Mississippi. This study included the black pine snake as one of the focal species of the study (Jones, et al. 2011).

ALABAMA

Longleaf pine habitat improvement projects (2007 thru 2011) within the historic range of the black pine snake in Alabama.

County	Number Projects	Acres	Activity
Mobile	2	180	Restoration plantings
Mobile	1	250	Prescribed burning
Washington	1	50	Restoration plantings
Washington	1	750	Prescribed burning
Baldwin	1	20	Restoration plantings
Baldwin	1	2,800	Prescribed burning
Totals	**7**	**4,050**	

MISSISSIPPI

Longleaf pine habitat improvement projects (2007 thru 2011) within the historic range of the black pine snake in Mississippi.

County	Number Projects	Acres	Activity*
Forest	0	0	N/A
George	5	137	Restoration
Harrison	0	0	N/A
Jones	1	132	Restoration
Marion	4	232	Restoration
Pearl River	18	1,972	Restoration
Perry	2	185	Restoration
Stone	4	152	Restoration
Wayne	2	102	Restoration
Totals	**36**	**2,912**	

* *Conservation habitat improvement practices vary with each project, but may include site preparation, planting of seedlings and understory vegetation, prescribed burning, and invasive plant treatment.*

Longleaf pine habitat improvement projects (2007 thru 2011) in counties adjacent to counties within the historic range of the black pine snake in Mississippi.

County	Number Projects	Acres	Activity*
Walthall	2	133	Restoration
Lamar	15	1,233	Restoration
Hancock	4	96	Restoration

Covington	1	30	Restoration
Lawrence	5	661	Restoration
Greene**	12	930	Restoration
Smith	1	27	Restoration
Totals	**40**	**3,110**	

* *Conservation habitat improvement practices vary with each project, but may include site preparation, planting of seedlings and understory vegetation, prescribed burning, and invasive plant treatment.*
***The PFW biologist has personally seen both a live and a dead Black Pine Snake in Greene County.*

REFERENCES:

Jones, J. C., et al. 2011. Habitat quality assessment for gopher tortoises and grassland species associates on conservation reserve lands and adjacent lands in south Mississippi. Draft final report. Mississippi State University, Starkville, MS. 98pp.

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Steering Committee, Regional Working Group. 2009. America's longleaf: Range-wide conservation plan for longleaf pine. 42pp. **http://www.americaslongleaf.org**

U. S. Fish and Wildlife Service. 2006. Personal communication. Jim Boggs, Assistant Field Supervisor, Lafayette, LA Field Office; Randy Roach, Alabama Partners Program Coordinator, Daphne, AL; Ray Aycock, Project Leader, Jackson, MS Field Office.

U. S. Fish and Wildlife Service. 2005. Species assessment and listing priority assignment form: black pine snake. Southeast Region, Atlanta, GA. 12 pp.

ELFIN-WOODS WARBLER *(Dendroica angelae)*: This is an endemic parulid from upland forest, designated as a "Spotlight" species and listed as a Candidate by the Service. The species is considered as "vulnerable" by the Puerto Rico Department of Natural and Environmental Resources (DNER). The current known distribution of the Elfin-woods warbler is limited to four locations in Puerto Rico. For two locations, a survey report in 2004 revealed a population size of approximately 300 pairs (BirdLife International, 2004). Most of the known range for this species is currently within two protected forests, Maricao Commonwealth Forest and the Caribbean National Forest,

administered and managed by the Puerto Rico DNER and the U. S. Forest Service, respectively. Both populations occur at low densities. The area for this pilot effort included those private lands within the Las Marias and Maricao municipalities, adjacent to the Maricao Commonwealth Forest, where the species has been documented nesting in shade coffee plantations.

Elfin-woods warbler

THREATS: Recognized threats to this species include destruction of habitat due to catastrophic events such as hurricanes, as well as detrimental agricultural activities including sun coffee plantations, timber harvest, and construction activities.
In addition, recreational activities in areas where this species exists may result in damage to habitat or significant disturbance or harassment. The Service listing priority for this species is low to moderate.

HABITAT PREFERENCE: High elevation forests within Puerto Rico.

RECOMMENDED HABITAT IMPROVEMENT ACTIONS:

- Facilitate and provide technical and financial assistance for the implementation of tree establishment in upland and riparian zones,
- use exclusion, and
- conversion of sun coffee plantations to shade coffee.

Denuded mountain slope prior to conversion to shade coffee; Puerto Rico.

Same area as above after planting shade coffee; Puerto Rico

ESTIMATE OF SURVEY AND MONITORING NEEDS:*

The Service intends to continue ongoing surveys and censuses for this species in potential habitat areas, including a status survey of the Carite Forest Elfin-woods warbler population. The Service has funded a study to investigate the status and nesting habitat requirements for this species. For habitat improvement projects that have been implemented, we will develop a monitoring plan and carry out monitoring to document the use or non use of reestablished habitat by the species. Estimated cost to carry out these efforts: $20,000/yr.

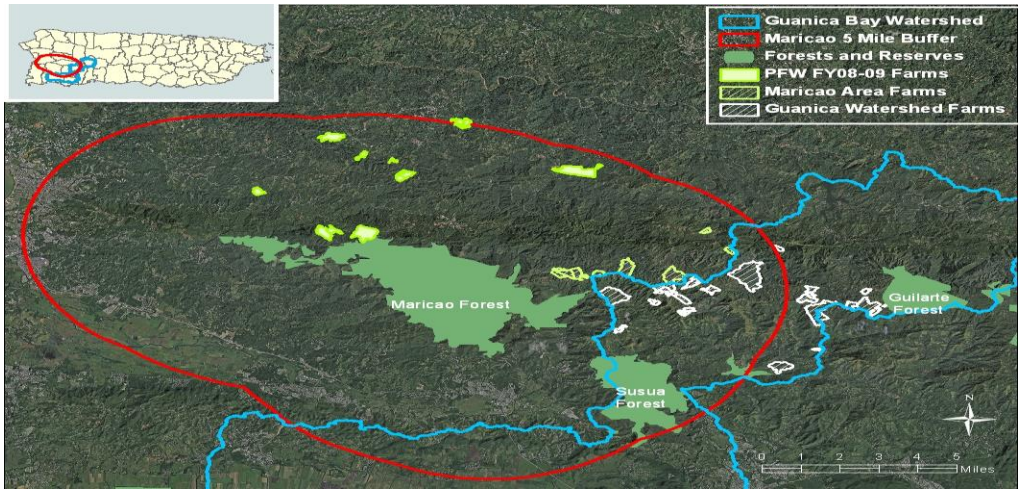
* A designated funding source for these estimated needs has not been determined.

FIVE-YEAR HABITAT ACCOMPLISHMENTS THROUGH THE PFW PROGRAM:

The PFW Program focus has been on private lands within five miles of the Maricao Commonwealth Forest. The first farms within the designated 5 mile buffer area of the Maricao Commonwealth Forest were planted in FY09. In FY10, the Service also started an aggressive sun to shade coffee initiative through the Coastal Program (CP) in the Rio Loco watershed in partnership with NRCS, as part of the Guánica Bay/Río Loco Watershed Plan to reduce sedimentation and agricultural runoff to coral reefs off Guánica Bay. While this was initiated primarily as a benefit for coral reefs, much of this upper watershed lies within the designated five miles of Maricao Forest, and it lies along the mountain corridor that connects the two major protected Commonwealth forests, Maricao and Guilarte. The Service expanded efforts in the adjacent watershed next to the Maricao Forest to enhance the corridor being created for the Elfin-woods warbler and other migratory and resident birds between these forests. In FY11, NRCS joined the Elfin-woods warbler initiative by concentrating their Wildlife Habitat Incentives Program (WHIP) farm incentive activities in the Maricao watershed.

Within the Caribbean, the PFW staff works closely with local landowners, the NRCS, the Puerto Rico DNER, non-government entities, and a variety of other partners to carry out priority habitat conservation. Service PFW staff provides technical assistance to USDA (NRCS and FSA) with certain aspects of their Farm Bill conservation program delivery by participating in Technical Committee meetings, helping to develop ranking systems for the various conservation programs, review of conservation practices, and assistance in the field if needed.

Sun to shade coffee farms with habitat improvement funded through the PFW and CP; PFW within the 5-mile buffer area around the Maricao Forest, and CP within the upper Guanica Bay watershed.



The table below shows the results from FY07-11. The effort is continuing with an additional 10 to 20 farms planned for FY12 funding from the Service and NRCS through a continued agreement between the two agencies. Through landowner agreements, the NRCS pays a cost-share to the farmers for implementing approved conservation practices, while the Service provides extensive technical assistance and funding for the seedling trees through a cooperative agreement with a non-government organization (Envirosurvey, Inc.). The costs shown are an estimate of Service costs for the tree production and technical assistance by Program and in total. The costs do not include the NRCS costs for practice implementation for their farm contracts.

Farms and acreage by FWS program and time period for the sun to shade coffee initiative in the Maricao area. Note: this does not include farms that fall outside of the 5 mile radius of Maricao Forest.

Habitat improvement projects (2007 thru 2011) within the focus area for the Elfin-woods warbler in Puerto Rico.

Status: Caribbean	**# Farms**	**# Trees**	**# Acres***	**Stream Miles***	
Completed FY07-11 (PFW)	12	7,562	155	1.424	
Completed FY07-11 (CP)	14	2,880	83	0.588	
Total Completed FY07-11	**26**	**10,442**	**238**	**2.012**	
Completed FY-12 (PFW)	1	540	15		
Completed FY12 (Coastal)	7	2,437	72		

Total Completed FY12	**8**	**2,977**	**87**		

* *Conservation habitat improvement practices vary with each project, but may include site preparation, planting of seedlings, invasive plant treatment, and management practices to reduce erosion and sedimentation.*

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U. S. Fish and Wildlife Service. 2005. Species assessment and listing priority assignment form: Elfin Woods Warbler. Southeast Region, Atlanta, GA. 10 pp.

Waide, R. 1995. Status and conservation of the Elfin-woods warbler (*Dendroica angelae*) in the Luquillo Experimental Forest. Final Report submitted to the U. S. Fish and Wildlife Service. 25 pp.

GOPHER TORTOISE *(Gopherus polyphemus)*: The gopher tortoise typically inhabits relatively well-drained, sandy soils throughout the southeastern Coastal Plain. In Florida, tortoises are widely distributed, occurring in parts of all 67 counties; however, their current range in South Florida is restricted due to unsuitable habitat and increased urbanization. Tortoises are also found in several counties in southwestern South Carolina (although it may have once occurred throughout the southern part of the State), South Georgia and Alabama, southeastern Mississippi, and the southeastern corner of Louisiana. The gopher tortoise is a federally threatened species in Alabama (west of the Tombigbee and Mobile Rivers), Louisiana, and Mississippi. Throughout the remainder of its range (eastern), the tortoise is a Federal candidate for listing. The gopher tortoise is generally considered to be a keystone species for the longleaf pine ecosystem.

It is estimated that approximately 88 percent of the population of tortoises occurs on private lands. No estimate is available for the gopher tortoise's population size within its known range of occurrence, although a total of about 23.5 million acres of potential habitat is estimated to occur within the candidate portion of its range (U. S. Fish and Wildlife Service 2011a, 2011b).

A Federal candidate species throughout the remainder of its range

Gopher tortoise

THREATS: Primary threats include the conversion of gopher tortoise habitat to urban areas, croplands, and pasture lands along with adverse forest management practices. Recent research studies have indicated that the invasive fire ant in the southeast can be very detrimental to young gopher tortoise hatchlings. Currently, the gopher tortoise in the eastern part of its range has a low to moderate priority for future listing as a threatened or endangered species under the Endangered Species Act.

HABITAT PREFERENCE: The gopher tortoise most often lives on well-drained, sandy soils in transitional (forest and grassy) areas. It requires an open forest floor with grasses and forbs for food, and sunny areas for nesting. Within the longleaf pine or other pine ecotypes, regular burning and thinning of trees is essential. Care must be taken with any clear cutting and site preparation that could result in adverse population effects lasting many years.

RECOMMENDED HABITAT IMPROVEMENT ACTIONS: Habitat improvement actions carried out at the local and landscape scales to remove or reduce threats include:

- the planting of longleaf pine and reestablishment of native ground cover within its historic range,
- invasive fire ant control,
- and implementation of forest management practices, including thinning of existing stands and the use of prescribed fire.
- Opportunities that would reduce fragmentation of suitable habitat are also a high priority.

The Service, throughout the range of the gopher tortoise, has numerous partnerships with states, the military, a variety of non-government organizations, and corporate entities working together to carry out conservation practices that will benefit the gopher tortoise. In 2006, the Service and a variety of Federal and non-government partners signed a Memorandum of Understanding to address the conservation of the gopher tortoise within the eastern part (at that time the gopher tortoise was a species of concern and not a candidate species) of its range. Subsequently, in 2008, Federal and State authorities and several non-government organizations signed a Candidate Conservation Agreement for the gopher tortoise (eastern population). This Agreement was revised in 2009. This Candidate Conservation Agreement provides comprehensive information about the gopher tortoise as well as agreed upon conservation strategies and the contributions that the partners provide through the partnership (U. S. Fish and Wildlife Service, 2009).

ESTIMATE OF SURVEY AND MONITORING NEEDS:* The 1990 recovery plan for the federally threatened population of the gopher tortoise (western part of range) recommended range-wide surveys at five-year intervals, and research on tortoise population viability and genetics. The recovery goal was established at two active burrows per acre, and about 1.2 tortoises per acre on priority soils. Since on many sites, the actual population density and age structure of tortoises is unknown, additional needs would include baseline population surveys of target populations, periodic surveys and biological response studies following the implementation of specific habitat improvement

activities, and possible re-stocking efforts in suitable restored habitat. The Service intent is to match up our monitoring and survey needs with the contributions of our partners. In the interim, we believe that a reasonable level of Service support for coordinating the survey and monitoring needs on an annual basis and within the eastern part of the gopher tortoise range is $200,000.

*A designated funding source for these estimated needs has not been determined.

FIVE-YEAR HABITAT ACCOMPLISHMENTS THROUGH THE PFW PROGRAM (Eastern portion of range only; Candidate status):

All PFW biologists, as part of their job responsibilities, are directed to assist the USDA (e.g., NRCS and FSA) in the delivery of their Farm Bill conservation programs. As such, PFW biologists attend State Technical Committee meetings, provide information in support of our recommendations for project ranking criteria, provide information on threatened, endangered, and candidate species and other Federal trust resources, assist with the review of USDA conservation practices, assist with the identification of private landowners interested in USDA conservation programs, and assist with environmental reviews and habitat improvement planning in the field as requested. The USDA Farm Bill conservation programs have traditionally been well funded, and have assisted many landowners with the implementation of conservation practices that would be beneficial to the black pine snake in Alabama and Mississippi.

On March 8, 2012, The Secretary of Agriculture announced a joint Working Lands for Wildlife initiative in partnership with the Service. This initiative will direct $33 million from the Wildlife Habitat Incentives Program to restore and enhance habitat for seven species across the nation that can benefit from greater conservation actions on private lands. For the Southeast Region, the gopher tortoise was selected. Funds will be allocated to the states in FY 2012, to begin the sign up and implementation process of specific conservation practices that will benefit the gopher tortoise (USDA 2012). The hope of all of the partners is that the cumulative effect of all conservation delivery actions to benefit the gopher tortoise will in the long term lead to the removal of this species from the candidate list, or to delisting in the portion of its range where it is listed as a threatened species.

Other key partners in addition to private landowners, include the state fish and wildlife agencies, the U. S. Forest Service, the Longleaf Alliance, The Nature Conservancy, and other non-government organizations, all making important contributions toward the recovery of this and other at-risk species.

The Service, in partnership with the NRCS, has funded a habitat evaluation study through Mississippi State University, involving both public and private lands in Mississippi. This study included the gopher tortoise as one of the focal species of the study (Jones, et al. 2011).

Longleaf pine and sandhills habitat improvement projects (2007-2011) within the eastern range of the gopher tortoise.

State	Number Projects	Acres	Activity*
ALABAMA	4	8,000	Habitat Improvement: Tree planting, prescribed fire, management
	1	2,130	Planning & Evaluation
	155	71,300	Prescribed fire
Total	**160**	**81,430**	
FLORIDA	**63**	**30,900**	Habitat Improvement: Tree planting, prescribed fire, management
GEORGIA	57	2,250	Habitat Improvement: Tree planting, prescribed fire, management
	1	39	Habitat Assessment
Total	**58**	**2,289**	
SOUTH CAROLINA			
	8	2,087	Longleaf Pine Habitat Improvement
	2	45	Shrub/Grassland Habitat Improvement
	8	637	Longleaf Pine habitat Improvement
Total	**18**	**2,769**	
Cumulative Total	**299**	**117,388**	

* *Conservation habitat improvement practices vary with each project, but may include site preparation, planting of seedlings and understory vegetation, prescribed burning, and invasive plant treatment.*

Young stand of planted longleaf pine in Georgia.

Prescribed fire in a young stand of planted longleaf pine; fire is essential to the success of restoring this ecosystem.

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U. S. Fish and Wildlife Service. 2012. Species profile for gopher tortoise. Internet at: **http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=C044** Accessed 03/15.12.

U. S. Fish and Wildlife Service. 2011a. Endangered and threatened wildlife and plants; 12-month finding on a petition to list the gopher tortoise as threatened in the eastern portion of its range. Federal Register 76 (144):45130-45162.

U. S. Fish and Wildlife Service. 2011b. Endangered and threatened wildlife and plants; review of native species that are candidates for listing as endangered or threatened; annual notice of findings on resubmitted petitions; annual description of progress on listing actions. Federal Register 76 (207):66370-66439.

U. S. Fish and Wildlife Service. 2009. Candidate conservation agreement for the gopher tortoise (*Gopherus polyphemus)*. U. S. Fish and Wildlife Service, Washington, D. C. 31pp plus appendices.

U. S. Fish and Wildlife Service. 2007. Gopher tortoise information. Daphne, Alabama Field Office. Internet at: **http://www.fws.gov/daphne/gopher/index.htm** Accessed 02/20/2007.

U. S. Fish and Wildlife Service. 1990. Gopher tortoise recovery plan. Southeast Region, Atlanta, GA. 28 pp.

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SLABSIDE PEARLYMUSSEL *(Lexingtonia dolabelloides)*: The slabside pearlymussel is believed to occur in a few counties in Alabama, Mississippi, Tennessee, and Virginia. The species is likely limited to nine streams in the Tennessee River System (Alabama, Mississippi, Tennessee, Virginia), and is considered eliminated from the Cumberland River System (Kentucky and Tennessee), and from the Tennessee River main stem. This species has been eliminated from about 60 percent of its historical habitat, but may still occur in the following rivers: Powell River, Clinch River, North Fork Holston River, Big Moccasin Creek, Middle Fork Holston River, Nolichucky River, Hiwassee River, Paint Rock River, Larkin Fork, Estill Fork, Hurricane Creek, Elk River, Bear Creek, Buffalo River, and Duck River. Population data gathered over the past 10 years indicates that this species is rare in about half of its existing populations. Although it is common in other population locations, it is viable and reproducing in only a few locations. Populations of the slabside pearlymussel have been declining throughout its remaining range, with the possible exception of the largest populations. This species occurs in streams that run exclusively through private lands.

Slabside Pearly Mussel

THREATS: The decline of this species is due primarily to habitat loss and degradation that have occurred over the last 130 years. Primary threats and causes for decline include impoundments, stream channel alterations, water pollution, and sedimentation. Population losses due to man-made impoundments have probably contributed more to the decline of this species than any other single factor. Other significant threats include in-stream gravel mining, heavy-metal drainage and sedimentation from coal mining, thermal alterations below hydropower dams, and contaminants from point and non-point

discharges. The remaining populations of slabside pearlymussels are generally small and geographically isolated. This patchy distribution in short river reaches makes them much more susceptible to elimination from single catastrophic events, such as toxic chemical spills. The current listing priority for this species is high, and the threats are considered to be imminent.

Before the livestock exclusion fence was installed. Cattle loafing along river's edge creating erosion and sedimentation issues.

After the livestock exclusion fence was installed. Cattle are excluded from accessing the river's edge.

Paint Rock River, AL: Before project: Steep, eroding bank with signs of bank sloughing.

Paint Rock River, AL: After project: Re-contoured bank with rock at the toe of the slope, vegetated erosion control blanket on the slope, and livestock exclusionary fencing.

HABITAT PREFERENCE: This species is primarily a large stream species, inhabiting sand, fine gravel, and cobble substrates in relatively shallow riffles and shoals with moderate current. The species also requires flowing, well-oxygenated waters to thrive.

RECOMMENDED HABITAT IMPROVEMENT ACTIONS:

- Reducing erosion and sedimentation and improving water quality by restoring, enhancing, managing, and protecting riparian and in-stream aquatic habitat by carrying out activities such as planting of native vegetation within stream buffer areas, bank stabilization, fencing out or excluding livestock from streams, in-stream habitat structures, and re-stocking of target species into suitable habitat.
- The significant habitat loss and degradation threats caused by large impoundments cannot be recovered or removed through the PFW Program.

ESTIMATE OF SURVEY AND MONITORING NEEDS*: Any future removal of the slabside pearlymussel from the candidate list should depend on several types of information, and the evaluation of that information to reach rational decisions:

1) Surveys for new populations on private and public lands to determine existing population levels; estimated cost=$50,000 to $100,000
2) Evaluation of the impact of specific conservation practices on the population status of the target species by reducing or eliminating specific threats (biological response); estimated cost= $100,000;
3) Develop better life history information; estimated cost unknown.

In addition, an evaluation of the need for and feasibility of development and use of culture techniques for potential propagation and reintroduction into suitable habitat is recommended. Estimated cost for this action is unknown.

* A designated funding source for these estimated needs has not been determined.

FIVE-YEAR HABITAT ACCOMPLISHMENTS THROUGH THE PFW PROGRAM:

Key partners in addition to private landowners, include the state fish and wildlife agencies, NRCS, The Nature Conservancy, and other non-government organizations, all making important contributions toward the recovery of this and other at-risk species.

Habitat improvement projects (2007-2011) within the range of the Slabside pearly mussel.

State	Number Projects	Stream Miles/Acres	Activity
ALABAMA (North)	**5**	**2.25/5**	Riparian buffer and streambank stabilization

TENNESSEE	**45**	**42/358**	Riparian buffer and streambank stabilization
Total	**50**	**44.25/363**	

REFERENCES:

Internet at: **http://en.wikipedia.org/wiki/Slab-sided_naiad. Accessed 12/06/2011.**

U. S. Fish and Wildlife Service. 2011. Species profile: slabside pearlymussel. Internet at: **http://ecos.fws.gov/speciesProfile/SpeciesReport.do?spcode=F01Y** Accessed 12/06/2011.

U. S. Fish and Wildlife Service. 2011. Species assessment and listing priority assignment form: slabside pearlymussel. Southeast Region, Atlanta, GA. 15 pp.

YELLOWCHEEK DARTER *(Etheostoma moorei)*: Recent population status information has estimated that only about 10,000 yellowcheek darters survive in the headwater streams of the Little Red River in Arkansas. Currently, the species is believed to occur in streams in four counties in north central Arkansas. Approximately 93 percent of the upper Little Red River watershed is in private ownership. Since the early 1980's, the yellowcheek darter's population has declined dramatically from about 60,000 individuals to its present know population size.

In fiscal year 2007, when the PFW Program began this pilot initiative, the yellowcheek darter was designated as a Candidate species. Effective September 8, 2011, the yellowcheek darter was listed under the Endangered Species Act as "Endangered." Currently, a Recovery Plan for this species is not available. The change in status was brought about by a continuing decline in suitable habitat for the species, and the decision was influenced significantly by the increased development of natural gas resources within important watersheds for this species.

Yellowcheek darter: Conservation Fisheries, Inc.

THREATS: Historically, the yellowcheek darter was found throughout the length of the Little Red River headwaters to below the tailwaters of Greers Ferry Lake. The construction of the Greers Ferry Dam in 1964 flooded most of this darter's habitat. Since most of its former habitat is unsuitable, the yellowcheek darter is now restricted to the Middle, South, Archey, and Turkey Forks of the Little Red River. Other factors contributing to the population decline of this species include low yearly rainfall amounts, drought, and water pollution. Also, the cumulative impacts associated with the development of natural gas resources within local watersheds have become an important potential threat.

HABITAT PREFERENCE: This species needs high gradient headwater tributaries with clear water; permanent flow; moderate to strong riffles; and gravel, rubble, and boulder substrates. It cannot thrive in reservoir and pool environments or in the cold tailwaters below Greers Ferry Dam.

RECOMMENDED HABITAT IMPROVEMENT ACTIONS:

- Reduction of erosion and sedimentation and improvement of water quality by **r**estoring, enhancing, managing, and protecting riparian and in-stream aquatic habitat by carrying out activities such as planting of native vegetation, bank stabilization, fencing out or excluding livestock from streams, in-stream habitat structures, reducing erosion and sedimentation from county and private dirt and gravel roads, and re-stocking of target species into suitable habitat.
- The significant habitat loss and degradation threats caused by the construction and operation of Greers Ferry Dam cannot be recovered or removed through the PFW Program.

Bank stabilization work: Upper Little Red River watershed

ESTIMATED SURVEY AND MONITORING NEEDS:* The following information needs are recognized:

> **1)** Surveys of existing populations; baseline determinations;
> **2)** Evaluation of the impact of specific habitat improvement projects on the population status of the species (biological response); and,
> **3)** Develop better life history information.

In addition, an evaluation of the need for and feasibility of development and use of culture techniques for potential propagation and reintroduction into suitable habitat is recommended. Estimated cost for this action is unknown.

Some of these information needs are being addressed by The Nature Conservancy and through the Conservation Strategy partnership. Estimated cost for all of the survey and monitoring needs is unknown, but we estimate $100,000 as a starting amount.

* A designated funding source for these estimated needs has not been determined.

FIVE-YEAR HABITAT ACCOMPLISHMENTS THROUGH THE PFW PROGRAM:

The Service implemented a Programmatic Safe Harbor Agreement and Programmatic Candidate Conservation Agreement with Assurances (SHA/CCAA) for the Speckled Pocketbook and Yellowcheek Darter in the upper Little Red River Watershed, AR, in 2007 (U. S. Fish and Wildlife Service et al., 2007). Since the implementation of the SHA/CCAA, the yellowcheek darter has been elevated to Endangered status. The Service's key partners in the agreement are the Arkansas Game and Fish Commission, USDA Natural Resources Conservation Service, and The Nature Conservancy. Under the agreement each of the partners would assist the Service in enrolling landowners into SHA/CCAA and provide technical assistance to the degree practicable, and assist with monitoring.

Since implementation of the SHA/CCAA, natural gas development has boomed in Arkansas. Cumulative impacts associated with extraction of natural gas, including construction of new roads, well pads, and pipelines, was a significant factor leading to the decision to list the species. Diversion of staff resources to address threats associated with the natural gas industry has further reduced available staff to enroll landowners and further conservation initiatives.

Through 2011, 13 landowners have entered into Property Owner Management Agreements (POMA), becoming cooperators in the SHA/CCAA, since its implementation, with another nine agreements pending. Since the species was listed as endangered in 2011, future agreements with assurances to landowners would change to safe harbor agreements instead of candidate conservation agreements with assurances.

Several primary impediments to implementing more SHA with private landowners in the upper Little Red River watershed include:

- Incentives are not attractive enough to overcome landowners fear of government regulatory issues and compliance; the regulatory compliance process is extensive, complex, and burdensome to all,
- Not enough available technical assistance and "boots-on-the-ground" to interact with potential landowners to build credibility and educate landowners.

Habitat improvement projects (2007-2011) benefitting the Yellowcheek darter in Arkansas.

State	**Number Projects**	**Stream Miles/Acres**	**Activity**
ARKANSAS	13	0.9/5	Riparian buffer, streambank stabilization, in-stream enhancement
	13	20	Stream water quality improvement*

Total	**13**	**20.9/5**	

** Water quality and habitat improvement benefits from the completed conservation practices have not been fully quantified; however, one project alone reduced sediment loading in the Middle Fork Little Red River by 800 tons/year. In addition, the streambank stabilization and road improvement practices implemented in other parts of the watershed have benefitted over 2 miles of Tick Creek and the Middle Fork Little Red River and many additional miles of the South Fork Little Red River by reducing one of the major threats to the species, sedimentation.*

REFERENCES:

U. S. Fish and Wildlife Service. 2007. Species profile: yellowcheek darter. Internet at: **http://ecos.fws.gov/speciesProfile/SpeciesReport.do?spcode=E01E** Accessed 03/16/2012.

U. S. Fish and Wildlife Service, Arkansas Game and Fish Commission, The Nature Conservancy (Arkansas Office), and Natural Resources Conservation Service (Arkansas Office). 2007. Programmatic safe harbor agreement and programmatic candidate conservation agreement with assurances for the speckled pocketbook and yellowcheek darter in the upper Little Red River watershed, Arkansas. U. S. Fish and Wildlife, Arkansas field Office, Conway, AR. 38pp, plus attachments.

U. S. Fish and Wildlife Service. 2006. Screening information for consideration of categorical exclusion for NEPA review purposes programmatic safe harbor agreement and candidate conservation agreement with assurances within the upper Little Red River watershed in Arkansas. Southeast Region, Atlanta, GA. 9 pp.

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U. S. Fish and Wildlife Service. 2004. Wal-Mart's donation aids recovery efforts for rare fish. Internet at: **http://www.fws.gov/southeast/news/2004/r04-001.html** Accessed 01/09/2006.

U. S. Fish and Wildlife Service. 2006. Personal communication, Mitch Wine, Staff biologist, Conway, AR Field Office.

EVERGLADES BULLY (Sideroxylon reclinatum spp. austrofloridense): The Everglades bully is an upright shrub or small tree from about 3-6 feet tall, known from only a few locations in South Florida (primarily Miami-Dade County).

Everglades bully

THREATS: The primary threat is the present and threatened destruction or modification of its habitat or range. The Miami-Dade County pine rocklands habitats have largely been altered or destroyed by residential, commercial, urban development, and agriculture. Only about 2 percent of the historic pine rockland remain, and on private lands only fragmented tracts ranging from just a few acres up to about 132 acres remain (680 acres total). Most of the remaining pine rockland habitat occurs on public land (~2,267 acres). Other threats include fire suppression and invasive species. These threats are expected to continue with increases in Florida's human population. Over the long term, climate change and sea level rise and salt water intrusion in South Florida are also expected to be a major threat. The species currently is a low priority for future listing as a threatened or endangered species by the Service.

HABITAT: The Everglades bully is restricted to pinelands with tropical understory vegetation on limestone rock (pine rocklands), mostly in the Long Pine Key area of the Everglades National Park. Smaller occurrences are found on private lands, including some natural forest community fragments and other parcels. Of the original 182,780 acres where this species once occurred, only about 20,106 acres remained in 1996.

RECOMMENDED HABITAT IMPROVEMENT:

- Protection of existing habitat.
- Restore and manage habitat through the elimination or control of invasive and exotic species and the use of prescribed fire.

ESTIMATED SURVEY AND MONITORING NEEDS: Monitor and survey remaining small populations in Miami-Dade County. Evaluate and track new restoration efforts.

The Service has estimated that a reasonable level of support for the coordinating the conservation strategy for this species on an annual basis is $50,000*

* A designated funding source for these estimated needs has not been determined.

FIVE-YEAR HABITAT ACCOMPLISHMENTS THROUGH THE PFW PROGRAM:

Our key partners in this initiative include the Institute for Regional Conservation, the Miami Metro Zoo, and local private landowners.

Habitat improvement projects (2007-2011) benefitting the Everglades bully in South Florida.

State	Number Projects*	Acres	Activity
FLORIDA (South-Miami-Dade counties	**8**	**44**	Invasive species control, prescribed burning, re-planting of native vegetation.

**Note: The Service's Coastal Program has five active projects within the pine rocklands focus area of South Florida that were funded with American Recovery and Reinvestment Act funds in 2009 (U. S. Congress. 2009).*

REFERENCES:

U. S. Congress. 2009. American Recovery and Reinvestment Act. Public Law 111-5, effective February 17, 2009.

U. S. Fish and Wildlife Service. 2011. Species profile for Everglades bully….. Internet at: **http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q31M** Accessed 12/05/2011.

U. S. Fish and Wildlife Service. 2010. Species assessment and listing priority assignment form: Everglades bully. Southeast Region, Atlanta, GA 16 pp.

NatureServe. 2008. NatureServe Explorer: An online encyclopedia of life. NatureServe, Arlington, VA **http://www.natureserve.org/explorer.**

DISCUSSION AND RECOMMENDATIONS:

In carrying out this pilot initiative, it became clear to the PFW biologists that the conservation delivery efforts carried out through the PFW Program in support of the target species selected have addressed specific threats (specific to the project location, but not overall) and have improved the habitat quality for those species. Overall, PFW project funds are leveraged at an average ratio of 4:1 (four dollars from our partners for every Service dollar). The conservation delivery staff of the PFW Program and other Service programs is critical to our success. The 32 PFW Program staff within the Southeast Region represents the Service's primary conservation delivery component on private lands.

The PFW Program staff work directly with private landowners and other partners, and over the 25-year history of the Program has established credibility and accountability with our partners. Without the trust that has been established, our success in developing and implementing partnerships with private landowners and other partners would be far less than it is today. One of the often mentioned impediments to successful conservation delivery across all internal and external programs is a lack of "boots on the ground" to interact at a local level with private landowners and other partners. During these tough economic times, we hope that we can at least maintain our current conservation delivery capacity within the PFW Program, and perhaps increase our effectiveness and capacity over time.

To effectively address and accomplish the Director's Strategic Habitat Conservation goals, all Service operational programs should evaluate their capabilities and opportunities to carry out actions that would benefit Candidate species or species of concern. Once these evaluations are completed within each program, additional collaborations between all appropriate programs would be needed to leverage our resources and to develop specific cross-program implementation strategies and data tracking to maximize the cumulative benefits of all actions.
In addition, to be successful we believe it is critical for the Service to strategically collaborate with other Federal and state agencies that have dedicated funding and technical assistance capabilities to address conservation actions that would benefit priority species. Service efforts alone (at the current funding level) are not likely to result in significant improvements to target species populations in the near term, but in cooperation with other key partners such as State fish and wildlife agencies, the military, and the NRCS through their implementation of Farm Bill Conservation Programs, the likelihood of success increases greatly. For example, the Service has recently actively engaged with the NRCS in implementing the Working Lands for Wildlife initiative. This initiative will direct $33 million from the Wildlife Habitat Incentives Program to restore and enhance habitat for seven species that can benefit from conservation actions on private lands. The gopher tortoise is one of the seven species (USDA 2012).

Within the PFW Program, it was clear from the beginning that the biological response (i.e., population status change) of the target species to the specific conservation practices that were implemented could not be determined over the five-year period of this pilot

within acceptable scientific standards that address the numerous variables that affect biological response. It was also clear that our conservation delivery efforts and the biological response of species to the specific conservation delivery practices must be a long-term process, due to the need to evaluate the many variables that may affect population status, including variables beyond our control such as weather, climate change, and disease.

The PFW Program lacks the capacity to carry out the extensive and long-term monitoring and research that would be needed to scientifically evaluate the biological response of a species as may be affected by the implementation of specific conservation practices. Monitoring is one of the major components of our Strategic Habitat Conservation approach, and it is a critical component if we are to objectively document and highlight the success of our efforts. Although we work with and collaborate with other Service program areas and our external partners to address priority monitoring and research needs, our current collective efforts are small relative to the magnitude of the need.

In thinking about the issues that have risen to the surface throughout this pilot effort, several overarching issues that we believe to be important were identified. These are summarized below with our recommendations for addressing them.

- **A Greater Service Emphasis and Priority Directed to Monitoring and Research of Listed, Candidate, and At-Risk Species is Needed:**

  Clearly this is a complex issue and need that is linked to Service funding and priorities common to all Service operational program areas (e.g., Refuges and Wildlife, Migratory Bird Program, Fisheries Program, PFW Program, Coastal Program, Recovery and Listing, etc.). Service field staff recognizes that biological response monitoring to document the success of our specific conservation delivery practices in reducing or eliminating threats to target species and thereby improving the habitat quality and life needs of these species is an essential component of the decision-making and adaptive management process. If we are to be able to prevent the listing of a species or remove a species from the protected or candidate list, we must be able to document our success in reducing or eliminating specific threats and limiting factors and show that species populations are stable or expanding. Monitoring is also a critical and essential component of adaptive management where we learn by doing and improve our implementation process. Longer-term research is also important in scientifically addressing questions, assumptions, and hypotheses that require a scientific method approach.

  Most Service field staff agrees that the current monitoring and research capacity within the Service is lacking and inadequate to meet the demanding fish and wildlife information needs of the Service. Further, given the diverse mission of the U. S. Geological Survey, this agency currently can only meet the monitoring and research needs of the Service in a small and piecemeal way. Within the context of our Strategic Habitat Conservation approach, the PFW Program directs

most of its technical and financial assistance to voluntary conservation delivery on private lands, and biological response monitoring and long-term research is not a primary component of the PFW Program. However, the PFW staff does work closely with our partners to develop and implement cooperative monitoring and research on selected species of mutual interest, but such limited partnership efforts cannot meet the magnitude of our fish and wildlife information needs.

Beginning circa 2009, the Department of the Interior and the Service formally established a Landscape Conservation Cooperative (LCC) concept through Executive Order 3289 (U. S. Department of the Interior. 2009). Currently, there are 22 designated LCCs across the nation. The purpose of these LCCs is to establish a collaborative partnership between federal, state, tribal and local governments, and private landowners to develop landscape-level strategies for understanding and responding to climate change impacts, and to address priority science information needs common to the partners in order to ensure the sustainability of America's land, water, wildlife, and cultural resources (U. S. Fish and Wildlife Service 2012a). Additionally, the Service's Refuges and Wildlife Program has initiated a comprehensive National Inventory and Monitoring Program to develop, implement, and support inventories and monitoring at refuges, and at the landscape, regional, and national scale to inform management and evaluate the effectiveness of strategies to support adaptive management in response to climate change and other major environmental stressors (Knutson, et al. 2005, O'Brian, B. 2010). Service field staff is hopeful that such collaborative partnerships will be adequately funded and can leverage resources with our partners to help address priority fish and wildlife information needs.

- **There is a Need for Additional Population Surveys for Listed and At-risk Species:**

  Much of the existing population survey data is old, and there are many areas of potential habitat that have either never been surveyed or have not been surveyed recently (especially in aquatic systems). Population surveys carried out in potential habitat areas could document new populations that could impact decisions on future listing; or, it could be determined that a species is more imperiled than thought based on the new information.

- **A Comprehensive Review and Evaluation of Existing Data Bases:**

  Currently, there are too many data bases and accomplishment tracking systems; everyone seems to have one. Unfortunately, they are mostly not linked and cannot or do not share information easily or efficiently in most cases. Even more important, they often are not developed to provide easy access to the specific information needed to answer the critical questions that must be answered in order for decision makers to have what they need to make informed decisions. This issue highlights the importance of having a dialog between the programmers and biologists to ensure that data systems are built to share information between data

systems and to collect, extract, and summarize the specific information needed to answer the most important questions. For example, if we need to know for at-risk species the specific conservation practices that were implemented and the specific threats that were reduced or eliminated, then the data set needs to collect and categorize this information so that it can be extracted from thousands of reports that may be entered into the data base. At present, many of the data sets only link species or groups of species to specific projects, and do not provide a mechanism for stepping the information down further to answer questions about threats or conservation practices implemented, etc.

Further, any comprehensive review and evaluation of existing data bases should consider consolidation of such bases whenever practical; the fewer the better. We also need to be able to share information across all conservation entities so that we can obtain a comprehensive accounting of all that is being done to benefit at-risk species or species of interest. Another idea for consideration would be to structure all of our Service technical assistance and project information data tracking systems across all operational programs so that data could also be cumulatively organized and presented within the five basic steps of the Strategic Habitat Conservation Process (i.e., Conservation Planning, Conservation Design, Conservation Delivery, Monitoring, and Research).

We understand that there are both internal and external efforts ongoing to address such data base issues. However, we believe that these issues should be elevated to a high priority, and solutions and changes implemented within the earliest possible time frame.

- **We Need to Develop Better Incentives to Offer Private Landowners to Protect and Conserve Listed, Candidate, and At-Risk Species on their Land for Public Benefit:**

  This need has been recognized by the Department of the Interior and the Service, and was recently highlighted on March 14, 2012, with an announcement of the start of a public process to explore expanding incentives for voluntary partnerships with private landowners and other land stewards to help conserve imperiled wildlife. Comments are being solicited through a Federal Register review process to obtain ideas about ways to provide private landowners with additional and more effective tools and support to provide important habitat for at-risk species U. S. Fish and Wildlife Service 2012b,c).

  Also, an additional private landowner incentive pilot was announced on March 8, 2012, by the Secretary of Agriculture. This is a joint "Working Lands for Wildlife" initiative with the Service that will direct $33 million from the Wildlife Habitat Incentives Program to restore and enhance habitat for seven species across the nation that can benefit from greater conservation actions on private lands. For the Southeast Region, the gopher tortoise and the golden-winged

warbler were selected. Funds will be allocated to the states in FY 2012, to begin the sign up and implementation process of specific conservation practices that will benefit the target species (USDA 2012).

With these very positive initiatives noted, several other issues were recognized that deserve mention. In addition to the technical and financial assistance that may be offered to private landowners through the PFW Program, a highly touted Service landowner incentive tool for candidate species is the Candidate Conservation Agreement with Assurances (CCAA). A CCAA provides regulatory assurances to a private landowner that voluntarily participates such that the landowner would not incur additional land-use restrictions, other than what is provided in a Property Owner Management Agreement, should the candidate species be later listed under the Endangered Species Act.

Based on our observations over the past five years, we believe that the CCAA tool can be a very effective landowner incentive tool when promoting partnerships with corporate landowners and non-government conservation landowner groups. Seemingly, corporate landowners and non-government conservation landowner groups are motivated to promote their public image, while carrying out conservation actions that benefit imperiled species. Also, these tools seem to work best for those species that have narrow ranges of geographic distribution, and typically fewer individual landowners.

On the other hand, most of the individual private landowners we have encountered within the Southeast Region do not seem to be highly motivated to either protect or benefit imperiled or at-risk species on their land. However, they do seem to be motivated by an esthetic interest in specific ecosystem types (e.g., longleaf pine, bottomland forests, clean rivers, etc.), and outdoor recreational values such as hunting, fishing, and nature in general, and most everything they do is weighed against how it may affect them economically. On many occasions, our PFW staff has been told by a private landowner partner that they want to re-establish a historic habitat type like longleaf pine or native prairie so that their children and/or grandchildren can see what the land once looked like as described by their father or from their own experience. Further, these individual private landowners are extremely cautious in dealing with the government, and typically in the beginning do not trust government employees. They often have an inherent fear and distrust of regulatory compliance issues and the complex processes that are associated with the Endangered Species Act (ESA). Over the last five years of this pilot, very few individual private landowners have expressed any interest in obtaining assurances through a CCAA. Also, for some that have asked for additional information, once they understood the complexity of the regulatory compliance, the details of their responsibilities, and the extensiveness of government access to their property for baseline monitoring and subsequent monitoring and studies, they lost interest. So, when the PFW staff promotes and negotiates partnerships with individual private landowners we proceed slowly, work hard to establish credibility and accountability (trust) with the

landowner, and do not initially address regulatory issues under the ESA, unless they are brought up by the landowner. Later, after we have established some degree of trust and credibility with a landowner, we may discuss conservation options and tools for at-risk species.

Our interactions with many individual private landowners have led us to believe that at least two changes are needed in order to overcome landowner fears and distrust of government in general: 1) we need to simplify and streamline the regulatory compliance and accountability linked with the assurance process to the extent allowed by law, and 2) we need to develop and implement more significant economic incentives similar to the approach used by USDA with the Wetland Reserve Program or the Healthy Forest Reserve Program.

1): Based on our experiences, in order to provide assurances to landowners with an incidental take permit (CCAA) typically requires a minimum of a year, and often several years, to develop and put in place the regulatory compliance documents and Federal Register notices and other currently required documents. We do not know if it is possible to streamline this process or to reduce the number and complexity of the currently required documents, but if the current process can be made simpler it would significantly improve our likelihood of successfully negotiating our partnership agreements. Further, it seems clear to our PFW staff that the Service does not have the capacity to develop all of the currently required documents for every single candidate or at-risk species, and the only rational solution that we have identified is to group similar species by habitats into a programmatic document so that one programmatic document would cover a large group of appropriate species with like needs. Once all of the needed regulatory and policy documentation is in place, the PFW Program should be able to insert simple language into our agreements to link back to the programmatic documents and the property owner's specific conservation plan for the target species and therefore be able to provide assurances.

2): Both the USDA Wetland Reserve Program and the Healthy Forest Reserve Program establish either permanent or 30-year conservation easements, and provide the landowner with a conservation easement payment based on the value of the easement (USDA 2012b). These programs also provide funds for restoration and management of the habitat, with the amount depending upon the length of the easement. These programs recognize that landowners are giving up a significant value of their land to promote the public habitat resource goals of the programs, and landowners are therefore rewarded for their contributions. Unfortunately, these great conservation programs are not all inclusive, but are specific to wetlands, converted wetlands, and forest habitats on a limited basis. A similar program adequately funded, staffed, and housed within the Service that would provide similar landowner incentives to those landowners willing to offer conservation easements and implement approved conservation practices for all listed,

candidate, and at-risk species would be a nationally significant approach that would have a high probability of achieving significant results over time.

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